



**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Assistant Commissioner for Patents  
Washington, DC 20231

Sir:

**GRANT OF ASSOCIATE POWER OF ATTORNEY**

I hereby state that I am an attorney of record on this application, having full power of substitution and revocation to prosecute and transact all business in the U.S. Patent and Trademark Office for each application and patent listed on the attached Appendix A.

Wherefore I hereby grant to Blake T. Biederman, Reg. No. 34,124; Donald T. Black, Reg. No. 27,999; Robert J. Follett, Reg. No. 39,566; Stanley Klorides, Reg. No. 29,399; Bernard Lau, Reg. No. 38,218; David M. Rosenblum, Reg. No. 29,341 and Steven T. Trinker, Reg. No. 28,274, associate power of attorneys to prosecute these applications and to transact all business connected with the applications and issued patents of Appendix A.

Respectfully submitted,

**WOOD, HERRON & EVANS, L.L.P.**

By:

A handwritten signature in dark ink, appearing to read "Donald F. Frei".

Donald F. Frei, Esq.  
Reg. No. 21,190  
August 31, 2000

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# Appendix A

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<i>Docket No.</i>	<i>SubCa</i>	<i>Countr</i>	<i>Status</i>	<i>App/Num</i>	<i>FileDate</i>	<i>Pat No</i>	<i>IssDate</i>	<i>ExpDate</i>	<i>Title</i>
021000	US		GRANTED	08/630155	10-Apr-1996	5896553	20-Apr-1999	10-Apr-2016	SINGLE PHASE TUNGSTEN-TITANIUM SPUTTER TARGETS AND METHOD OF PRODUCING SAME
021001	US		GRANTED	08/608857	29-Feb-1996	5879524	09-Mar-1999	29-Feb-2016	COMPOSITE BACKING PLATE FOR A SPUTTERING TARGET
021002	US		GRANTED	08/622055	24-Mar-1997	5866067	02-Feb-1999	27-Mar-2017	HIGH PURITY CHROMIUM METAL BY CASTING WITH CONTROLLED OXYGEN CONTENT
021003	US		GRANTED	08/515857	16-Aug-1995	5857611	12-Jan-1999	16-Aug-2015	SPUTTER TARGET BACKING PLATE ASSEMBLY AND METHOD OF MAKING SAME
021004	US		GRANTED	08/656462	14-May-1997	5846389	08-Dec-1998	14-May-2017	SPUTTERING TARGET PROTECTION DEVICE
021005	US		GRANTED	08/426246	21-Apr-1995	5836506	17-Nov-1998	21-Apr-2015	SPUTTER TARGET/BACKING PLATE ASSEMBLY AND METHOD OF MAKING SAME
021006	US		GRANTED	08/316269	30-Sep-1994	5785518	28-Jul-1998	30-Sep-2014	MASKING ELEMENT FIXTURE

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021007		US	GRANTED	08/618903	20-Mar-1996	5783795	21-Jul-1998	20-Mar-2016	BONDING OF SPUTTERING TARGET BY VARIABLE POLARITY PLASMA ARC WELDING
021008		US	GRANTED	08/743305	05-Nov-1996	5766380	16-Jun-1998	05-Nov-2016	METHOD FOR FABRICATING RANDOMLY ORIENTED ALUMINUM ALLOY SPUTTERING TARGETS WITH FINE GRAINS AND FINE PRECIPITATES
021009		US	GRANTED	08/667504	21-Jun-1996	5738770	14-Apr-1998	21-Jun-2016	MECHANICALLY JOINED SPUTTERING TARGET AND ADAPTER THEREFOR
021010		US	GRANTED	08/369389	06-Jan-1995	5700519	23-Dec-1997	06-Jan-2015	METHOD FOR PRODUCING ULTRA HIGH PURITY TITANIUM
021011		US	GRANTED	08/743472	04-Nov-1996	5698158	16-Dec-1997	04-Nov-2016	VACUUM DISTILLATION APPARATUS FOR PRODUCING ULTRA HIGH PURITY MATERIAL
021012		US	GRANTED	08/577798	22-Dec-1995	5674367	07-Oct-1997	22-Dec-2015	SPUTTERING TARGET HAVING A SHRINK FIT MOUNTING RING
021013		US	GRANTED	08/295594	25-Aug-1994	5656216	12-Aug-1997	12-Aug-2014	METHOD FOR MAKING METAL OXIDE SPUTTERING TARGETS(BARRIER POWDER ENVELOPE)
021014		US	GRANTED	08/626320	23-Apr-1996	5641389	24-Jun-1997	17-Feb-2015	MECHANICALLY JOINED SPUTTERING TARGET AND ADAPTER THEREFOR

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021015		US	GRANTED	07/845854	03-Mar-1992	5632869	27-May-1997	27-May-2014	METHOD OF PRETEXTURING A CATHODE SPUTTERING COATING AN ARTICLE THEREWITH
021016		US	GRANTED	08/391047	21-Feb-1995	5582630	10-Dec-1996	21-Feb-2015	ULTRA HIGH PURITY MAGNESIUM VACUUM DISTILLATION PURIFICATION METHOD
021017		US	GRANTED	08/390662	17-Feb-1995	5529673	25-Jun-1996	17-Feb-2015	MECHANICALLY JOINED SPUTTERING TARGET AND ADAPTER THEREFOR
021018		US	GRANTED	08/388205	14-Feb-1995	5490914	13-Feb-1996	14-Feb-2015	HIGH UTILIZATION SPUTTERING TARGET FOR CATHODE ASSEMBLY
021019		US	GRANTED	08/199627	22-Feb-1994	5474667	12-Dec-1995	22-Feb-2014	REDUCED STRESS SPUTTERING TARGET AND METHOD OF MANUFACTURING THEREFOR
021020		US	GRANTED	08/161143	02-Dec-1993	5439500	08-Aug-1995	08-Aug-2012	MAGNETO-OPTICAL ALLOY SPUTTER TARGETS
021021		US	GRANTED	08/234235	28-Apr-1994	5431066	11-Jul-1995	28-Apr-2014	DEVICE FOR PREPARING SAMPLES OF POWDERED METALS FOR ANALYSIS
021022		US	GRANTED	08/099185	29-Jul-1993	5373994	20-Dec-1994	20-Dec-2011	BALL MILL CAN POSITIONING DEVICE

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021023		US	GRANTED	07/967458	28-Oct-1992	5336386	09-Aug-1994	09-Aug-2011	TARGET FOR CATHODE SPUTTERING
021024		US	GRANTED	07/910644	08-Jul-1992	5230462	27-Jul-1993	27-Jul-2010	METHOD OF SOLDERING A SPUTTERING TARGET TO A BACKING MEMBER
021025		US	PENDING	08/295593	25-Aug-1994			25-Aug-2014	APPARATUS AND METHOD FOR MAKING METAL OXIDE SPUTTERING TARGETS
021026		US	PENDING	08/881948	25-Jun-1997			25-Jun-2017	MECHANICALLY JOINED SPUTTERING TARGET AND ADAPTOR THEREFOR
021027		US	GRANTED	08/885943	30-Jun-1997	5989673	23-Nov-1999	30-Jun-2017	CHROMIUM-TANTALUM OXIDES (Ca-TaOx), SPUTTERING TARGETS AND THIN FILM SEEDLAYER/SUBLAYERS FOR THIN FILM MAGNETIC RECORDING MEDIA
021028		US	PENDING	08/899612	24-Jul-1997			24-Jul-2017	METHODS FOR PRODUCING ULTRA HIGH PURITY TITANIUM
021029		US	GRANTED	08/910334	13-Aug-1997	6056857	02-May-2000	13-Aug-2017	CRYOGENIC ANNEALING OF SPUTTERING TARGET
021030		US	GRANTED	08/911539	14-Aug-1997	6045634	04-Apr-2000	14-Aug-2017	HIGH PURITY TITANIUM SPUTTERING TARGET AND METHOD OF MAKING

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021030-1		US	PENDING	09/501220	10-Feb-2000			14-Aug-2017	HIGH PURITY TITANIUM SPUTTERING TARGET AND METHOD OF MAKING
021031		US	GRANTED	08/926375	09-Sep-1997	6010583	04-Jan-2000	09-Sep-2017	METHOD OF MAKING AN UNREACTED METAL-ALUMINUM SPUTTERING TARGET
021032		US	GRANTED	09/024552	17-Feb-1998	6091046	18-Jul-2000	20-Mar-2016	BONDING OF SPUTTERING TARGET BY VARIABLE POLARITY PLASMA ARC WELDING
021033		US	GRANTED	09/054146	02-Apr-1998	5993575	30-Nov-1999	05-Nov-2016	METHOD FOR FABRICATING RANDOMLY ORIENTED ALUMINUM ALLOY SPUTTERING TARGETS WITH FINE GRAINS AND IFNE PRECIPITATES
021034		US	GRANTED	09/047849	25-Mar-1998	5993734	30-Nov-1999	25-Mar-2018	METHOD FOR MAKING W/TI SPUTTERING TARGETS AND PRODUCT IN AN INERT ATMOSPHERE
021035		US	GRANTED	09/057932	09-Apr-1998	6039788	21-Mar-2000	24-Mar-2017	MELTING AND CASTING OF HIGH PURITY CHROMIUM WITH CONTROLLED OXYGEN CONTENT
021036		US	GRANTED	09/088454	01-Jun-1998	6086735	11-Jul-2000	01-Jun-2018	CONTOURED SPUTTERING TARGET
021037		US	PENDING	09/151923	11-Sep-1998			11-Sep-2018	AUTOMATION OF HEAT TREATMENT FURNACES

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021038		US	Pending	09/146600	03-Sep-1998			03-Sep-2018	METHOD OF MANUFACTURING ENHANCED FINISH SPUTTERING TARGETS
021039		US	GRANTED	09/172311	14-Oct-1998	6073830	13-Jun-2000	14-Oct-2018	SPUTTER TARGET/BACKING PLATE ASSEMBLY AND METHOD OF MAKING SAME
021039-1		US	PENDING	09/511440	23-Feb-2000			14-Oct-2018	SPUTTER TARGET/BACKING PLATE ASSEMBLY AND METHOD OF MAKING SAME
021040		US	PENDING	09/220906	24-Dec-1998			24-Dec-2018	METHOD OF MAKING HIGH DENSITY, HIGH PURITY TUNGSTEN TARGET
021041		US	PENDING	09/226792	07-Jan-1999			16-Aug-2015	SPUTTER TARGET/BACKING PLATE ASSEMBLY AND METHOD OF MAKING SAME
021042		US	PENDING	09/260300	02-Mar-1999			02-Mar-2019	REFRACTORY COATED INDUCTION COIL FOR USE IN THIN FILM DEPOSITION AND METHOD FOR MAKING SAME
021043		US	PENDING	09/283084	31-Mar-1999			31-Mar-2019	NICKEL/VANADIUM SPUTTERING TARGET WITH ULTRA-LOW ALPHA EMISSION
021044		US	GRANTED	08/850707	02-May-1997	6030514	29-Feb-2000	02-May-2017	METHOD OF REDUCING SPUTTERING BURN-IN TIME, MINIMIZING SPUTTERED PARTICULATE, AND TARGET ASSEMBLY THEREFOR

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021045		US	WITHDRA	09/260295	02-Mar-1999			02-Mar-2019	METHOD OF MANUFACTURING AND REFILLING OF SPUTTER TARGETS BY THERMAL SPRAY FOR USE AND REUSE AND REUSE IN THIN FILM DEPOSITION
021046		US	PENDING	09/377587	19-Aug-1999			19-Aug-2019	LOW PERMEABILITY NON-PLANAR FERROMAGNETIC SPUTTER TARGETS
021047		US	PENDING	09/349285	08-Jul-1999			08-Jul-2019	METHOD OF BONDING SPUTTERING TARGETS TO BACKING PLATES
021048		US	PENDING	09/368062	03-Aug-1999			03-Aug-2019	FABRICATION OF CLAD HOLLOW CATHODE MAGNETRON TARGETS
021049		US	PENDING	09/349687	08-Jul-1999			08-Jul-2019	FABRICATION AND BONDING OF COPPER AND COPPER ALLOY SPUTTERING TARGETS
021050		US	PENDING	09/349666	08-Jul-1999			08-Jul-2019	METHOD OF MAKING HIGH DENSITY SPUTTERING TARGETS
021051		US	PENDING	09/353503	14-Jul-1999			14-Jul-2019	HIGH PERFORMANCE Cu/Cr TARGETS FOR SEMICONDUCTOR APPLICATIONS
021052		US	GRANTED	09/366453	03-Aug-1999	6042777	28-Mar-2000	03-Aug-2019	MANUFACTURING OF HIGH DENSITY INTERMETALLIC SPUTTER TARGETS

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021053		US	GRANTED	09/396276	15-Sep-1999	6092427	25-Jul-2000	15-Sep-2019	METHOD OF PREPARING BOND INTERFACE EVALUATION COUPON
021054		US	PENDING	09/401936	23-Sep-1999			23-Sep-2019	EXTENDED LIFE SPUTTER TARGETS
021055		US	PENDING	09/413073	06-Oct-1999			06-Oct-2019	HIGH MAGNETIC FLUX SPUTTERING TARGETS WITH VARIOUS MAGNETIC PERMEABILITY IN SELECTED REGIONS
021056		US	PENDING	09/431745	01-Nov-1999			01-Nov-2019	DETERMINATION OF ACTUAL DEFECT SIZE IN CATHODE SPUTTER TARGETS SUBJECTED TO ULTRASONIC INSPECTION
021057		US	PENDING	09/430988	01-Nov-1999			01-Nov-2019	METHOD OF MAKING LOW MAGNETIC PERMEABILITY COBALT SPUTTER TARGETS

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